

Fig.
1.

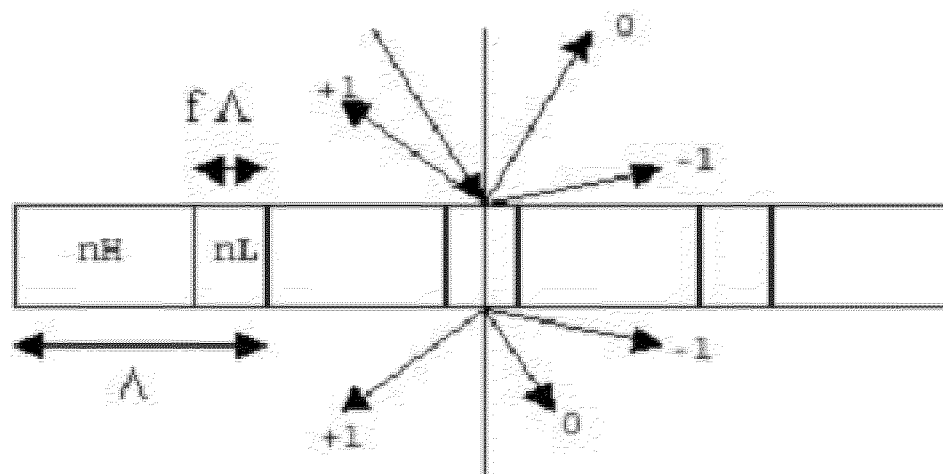


FIG. 2(a)

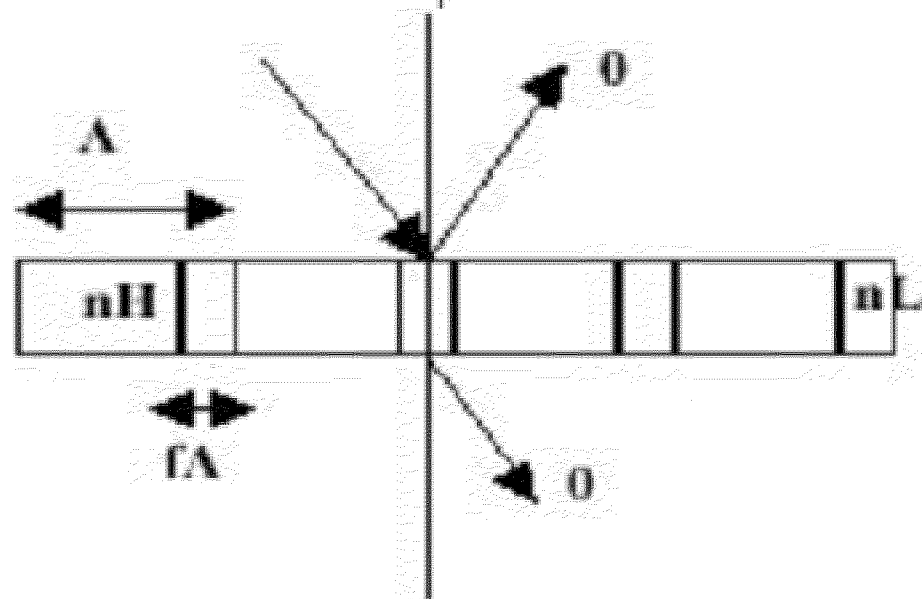


FIG. 2(b)

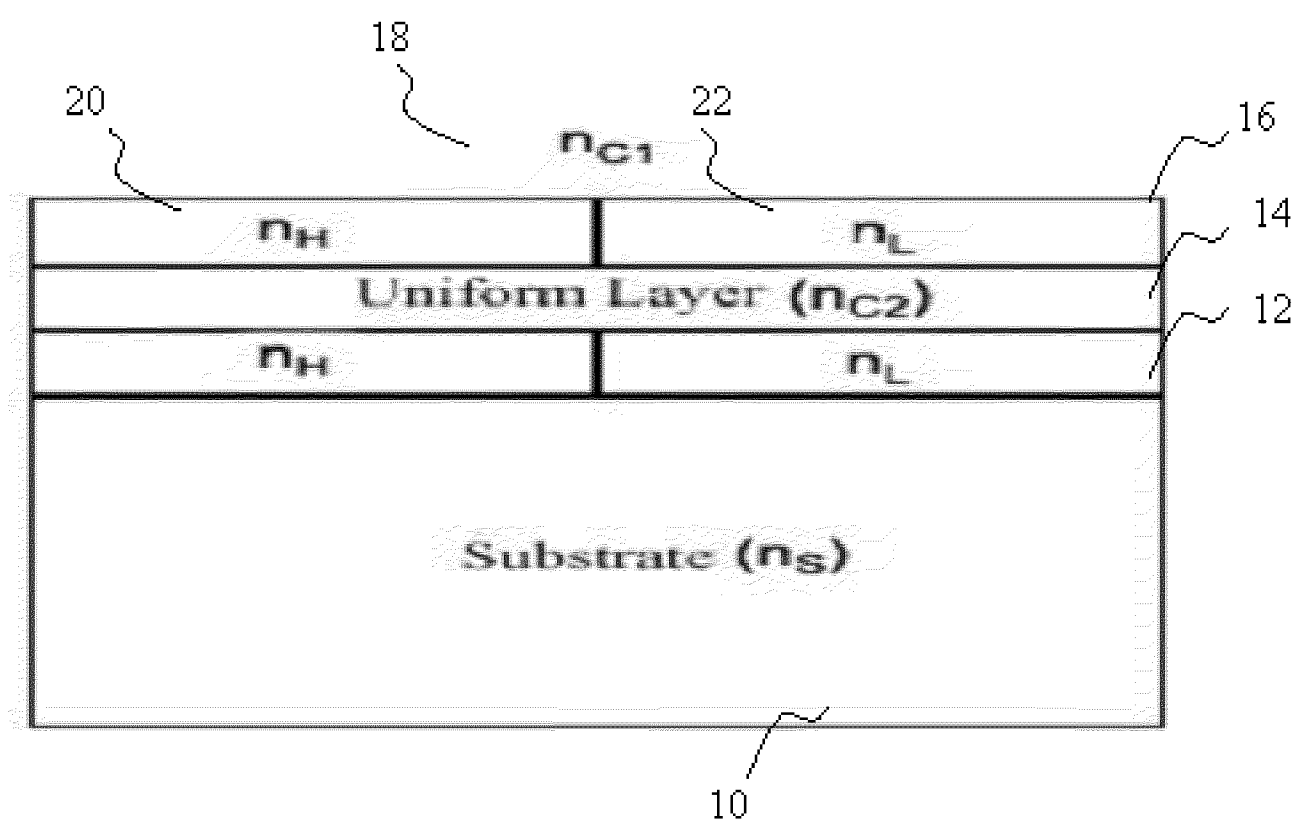


Fig. 3.

Table: Materials average refractive index for 3 – 12 μ m

Materials	Notation	Refractive index
Barium Fluoride (BaF) (Substrate)	n_s	1.47
Zinc Sulphide (ZnS) (Uniform Layer)	n_{c2} or n_2	2.22
Yttrium Oxide (Y_2O_3) (Low Index Grating Material)	n_L	1.69
Diamond (High Index Grating Material)	n_H	2.37
Air (Superstrate)	n_{c1}	1.0

Fig. 4.

Reflectance Vs Wavelength for Double Grating
Structure for $f = 0.3$

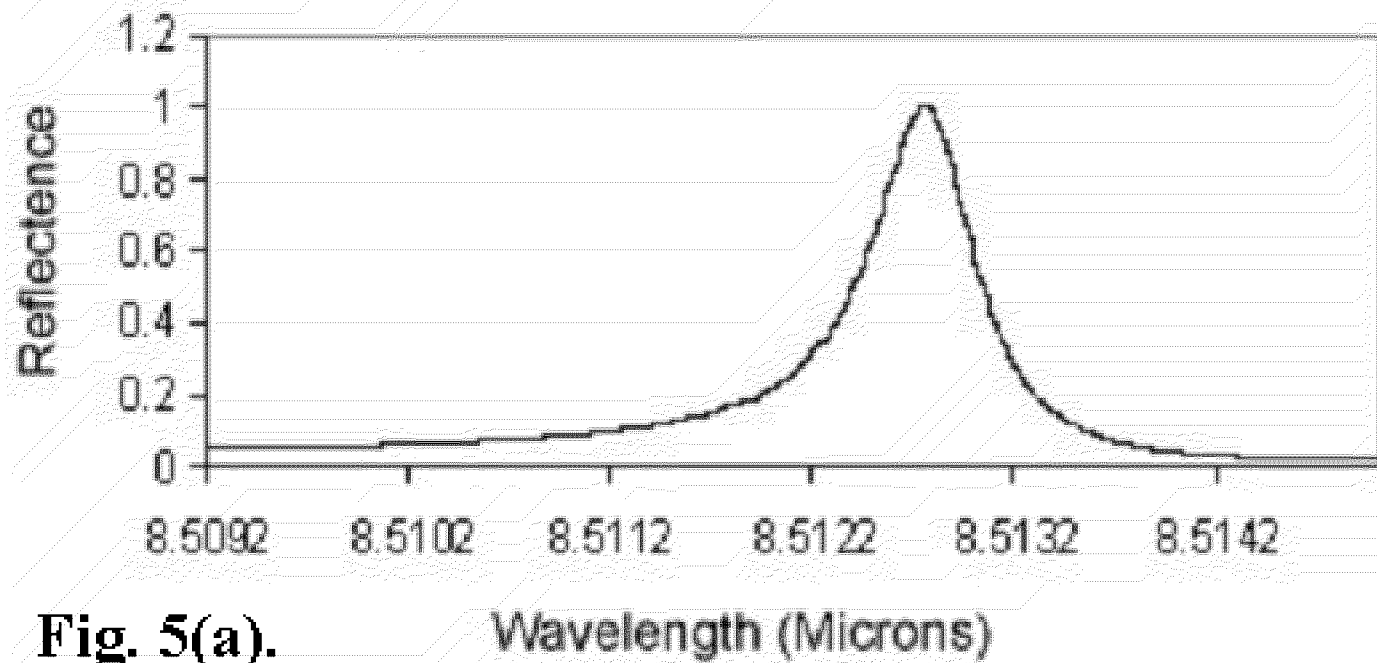


Fig. 5(a).

Reflectance Vs Wavelength for Double Grating Structure for $f = 0.5$

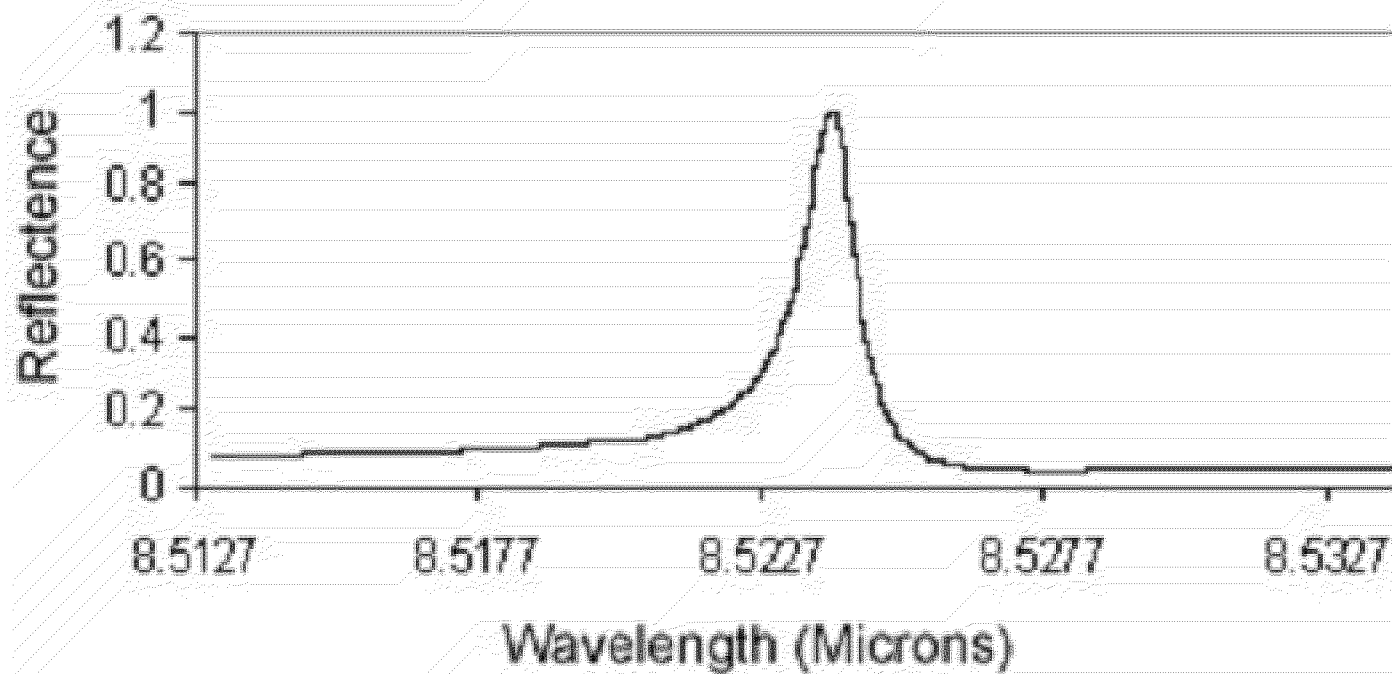


Fig. 5(b).

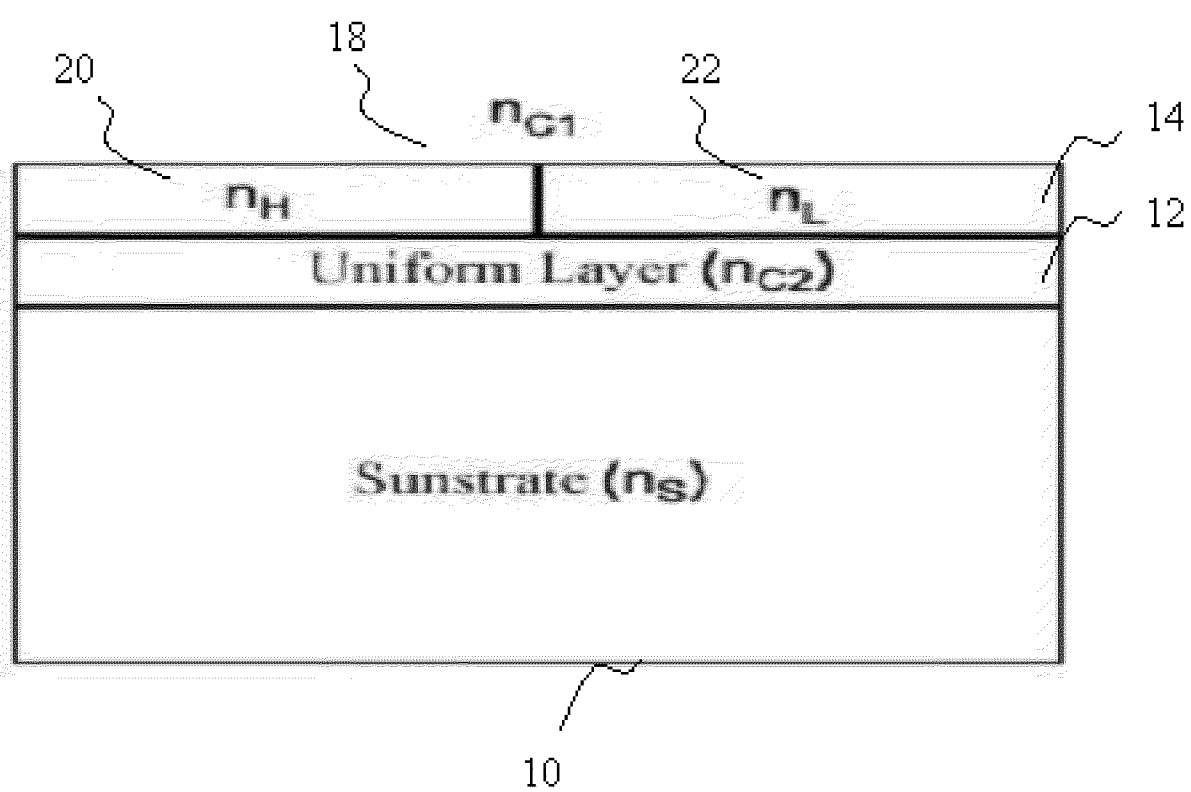


Fig. 6.

Reflectance Vs Wavelength for Single Grating Structure for $f = 0.3$

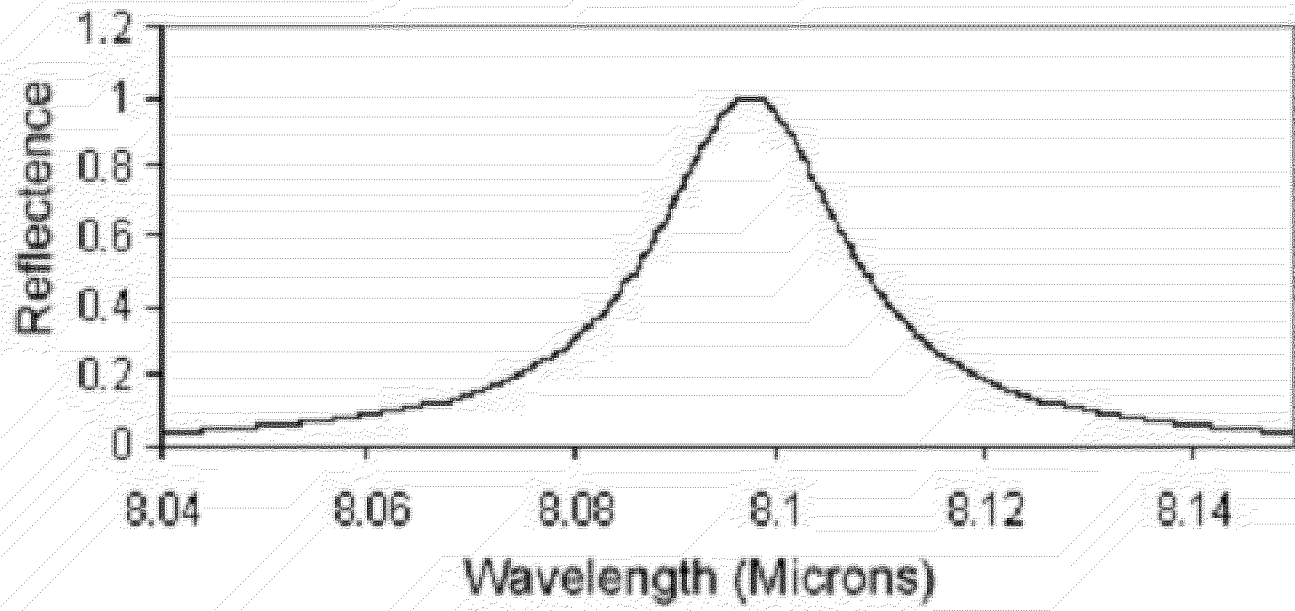


Fig. 7(a).

Reflectance Vs Wavelength for Single Grating
Structure for $f = 0.5$

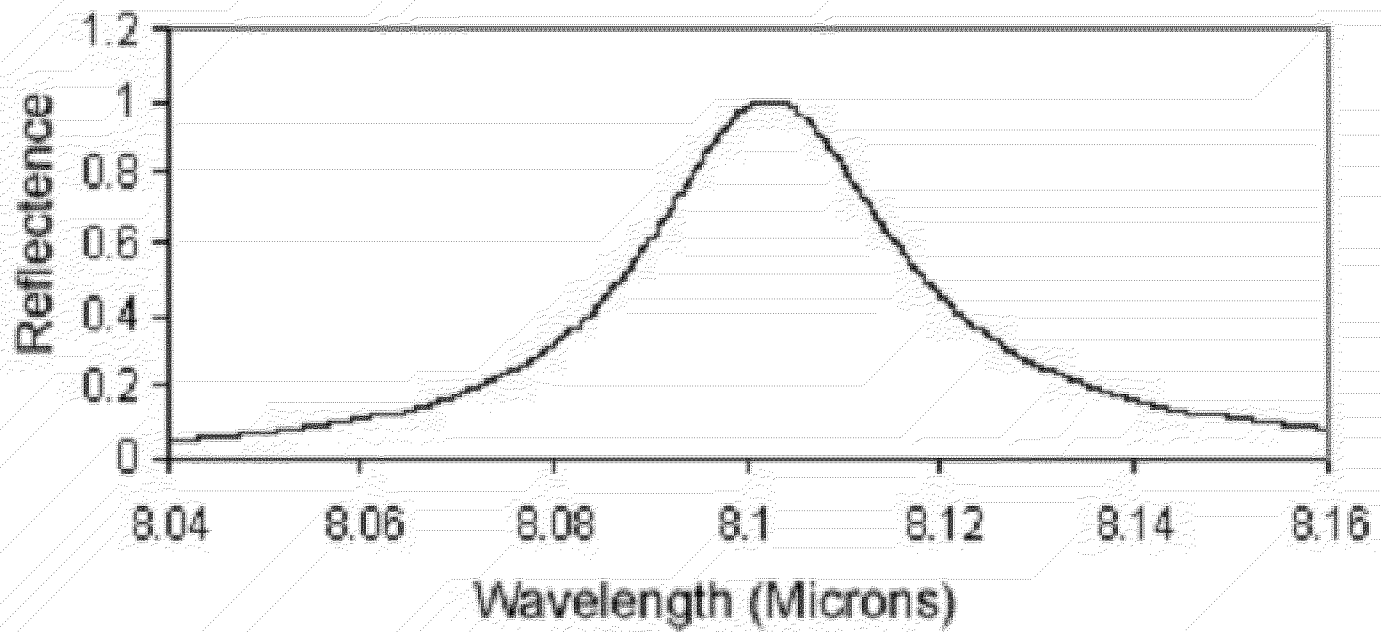
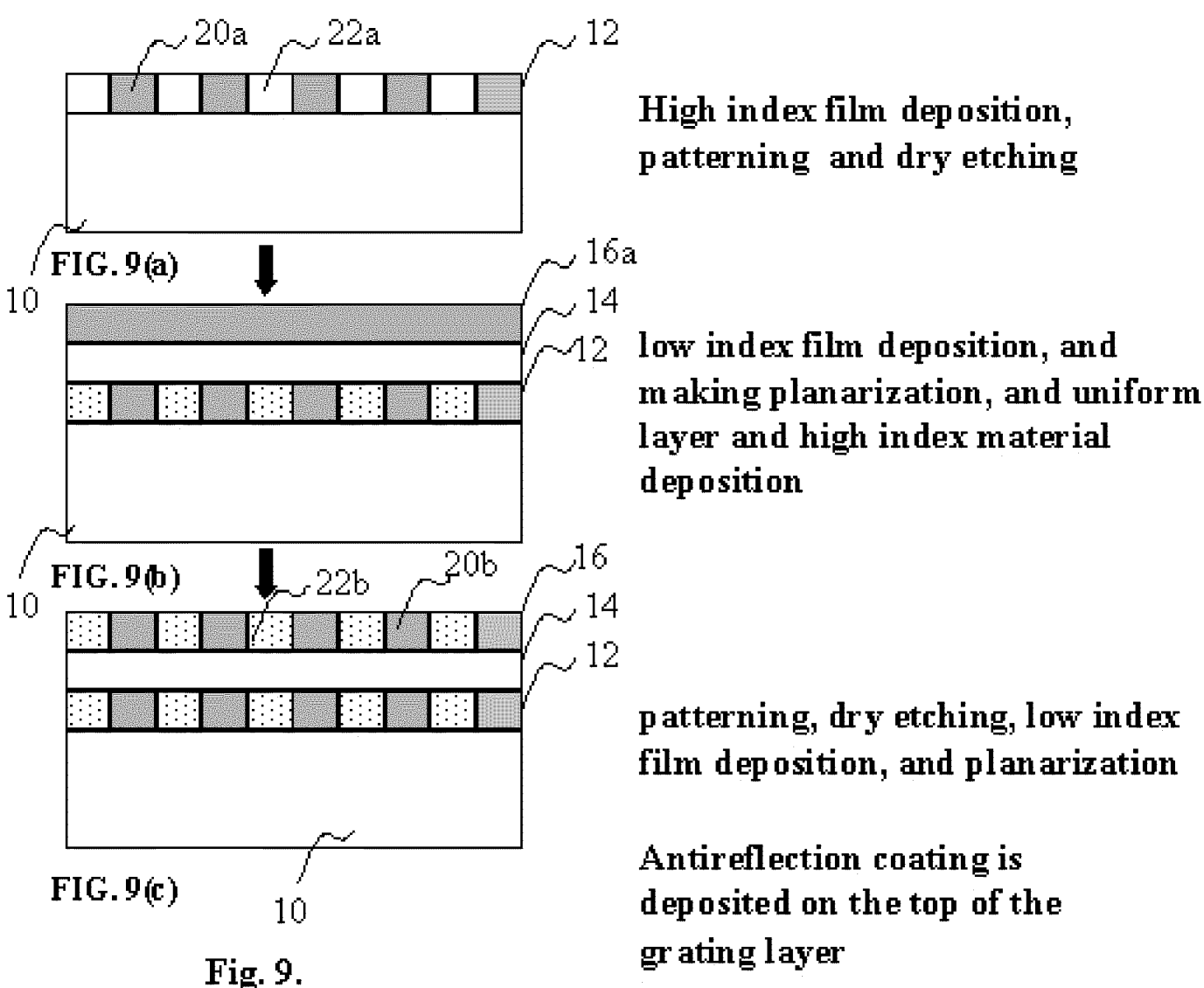


Fig. 7(b).

Table: Performance comparison between proposed and conventional filters

Estimated Performance	Fill Factor 0.5		Fill Factor 0.3		Conventional $\lambda/4$ Stacks
	Single Grating	Double Grating	Single Grating	Double Grating	
Peak Wavelength (μm)	8.1022	8.523	8.097	8.512	8
Peak Transmission (%)	>99.99	>99.99	>99.99	>99.99	>99.99
Bandwidth (nm)	31.45	1.211	22.23	0.638	453
Leakage (%)	<2	<3	<2	<3	40
Grating Spacing (μm)	4.6	4.7	4.6	4.7	-
Thickness (μm)	1.9811	3.0613	2.0191	3.1373	100

Fig. 8.



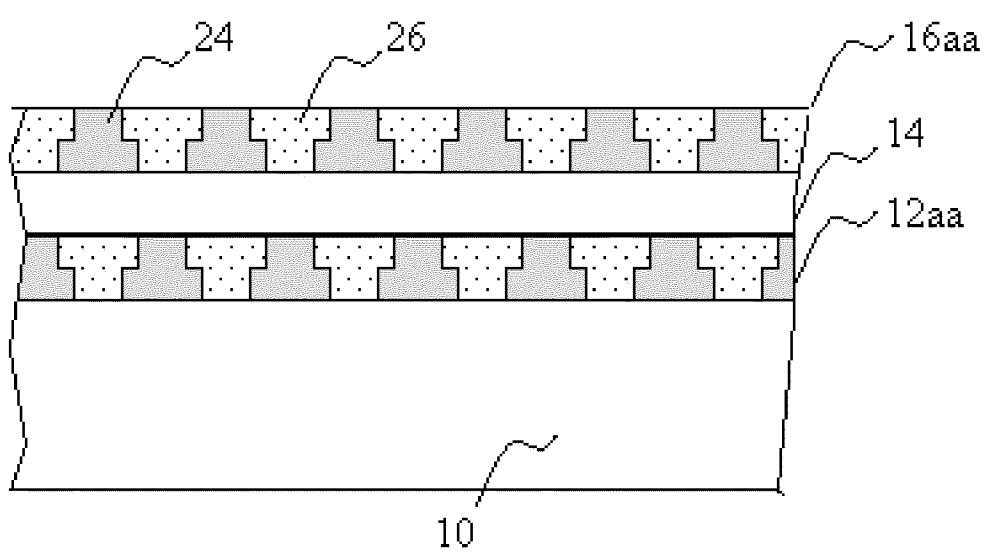


FIG. 10(a)

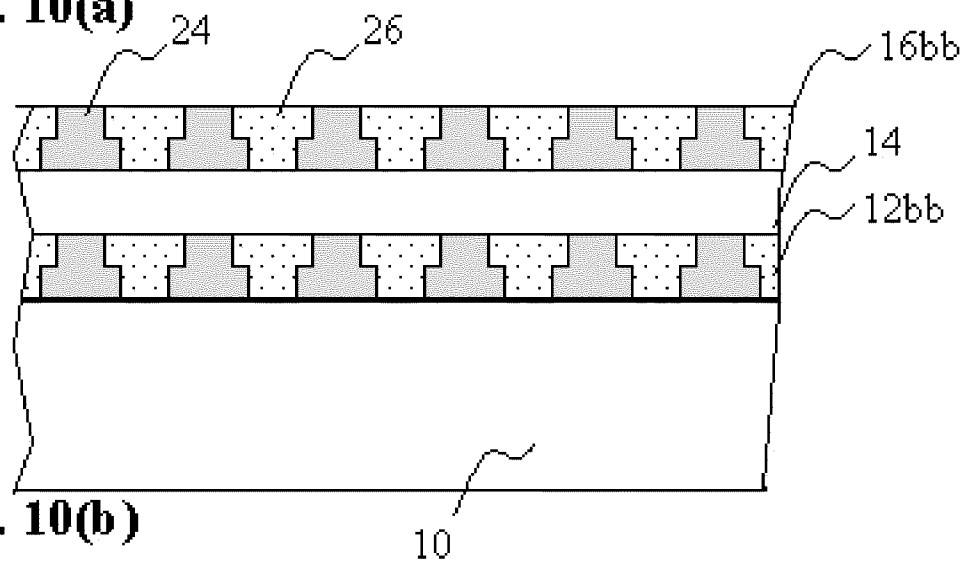
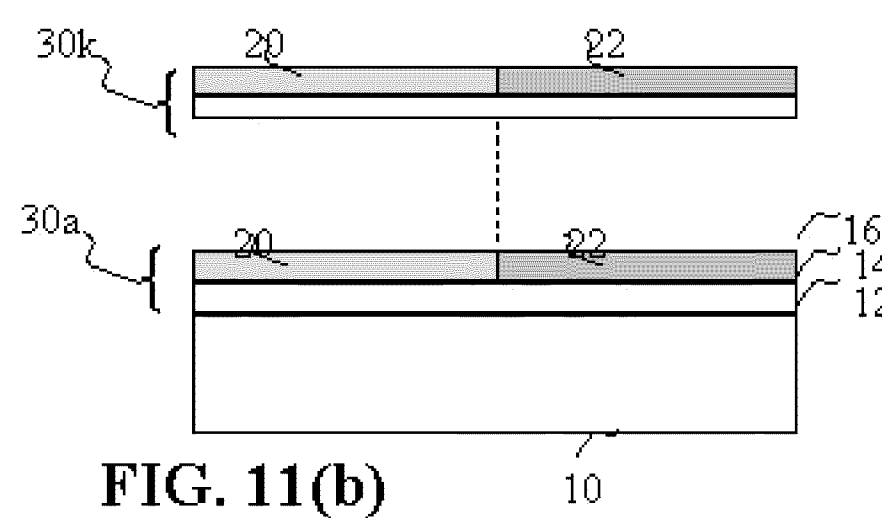
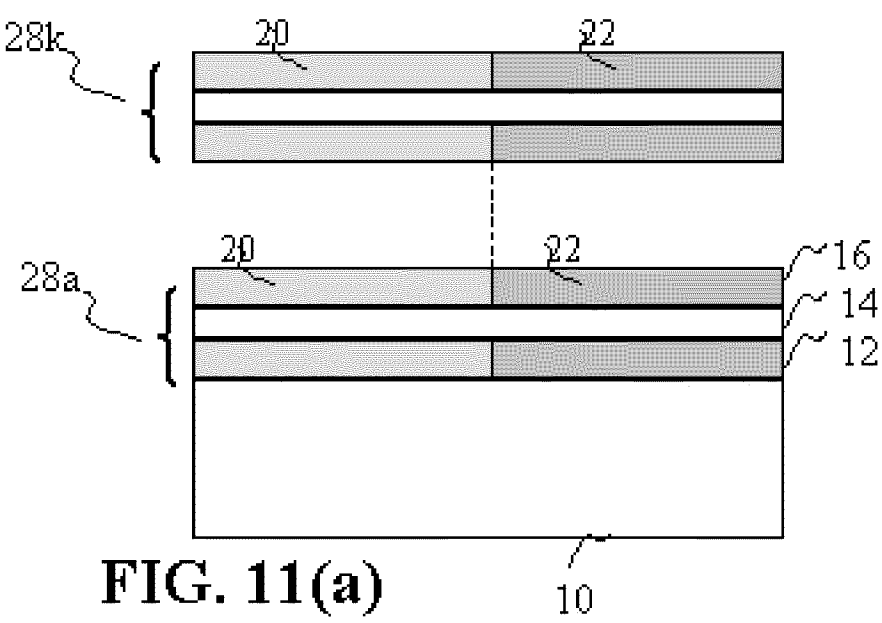


FIG. 10(b)



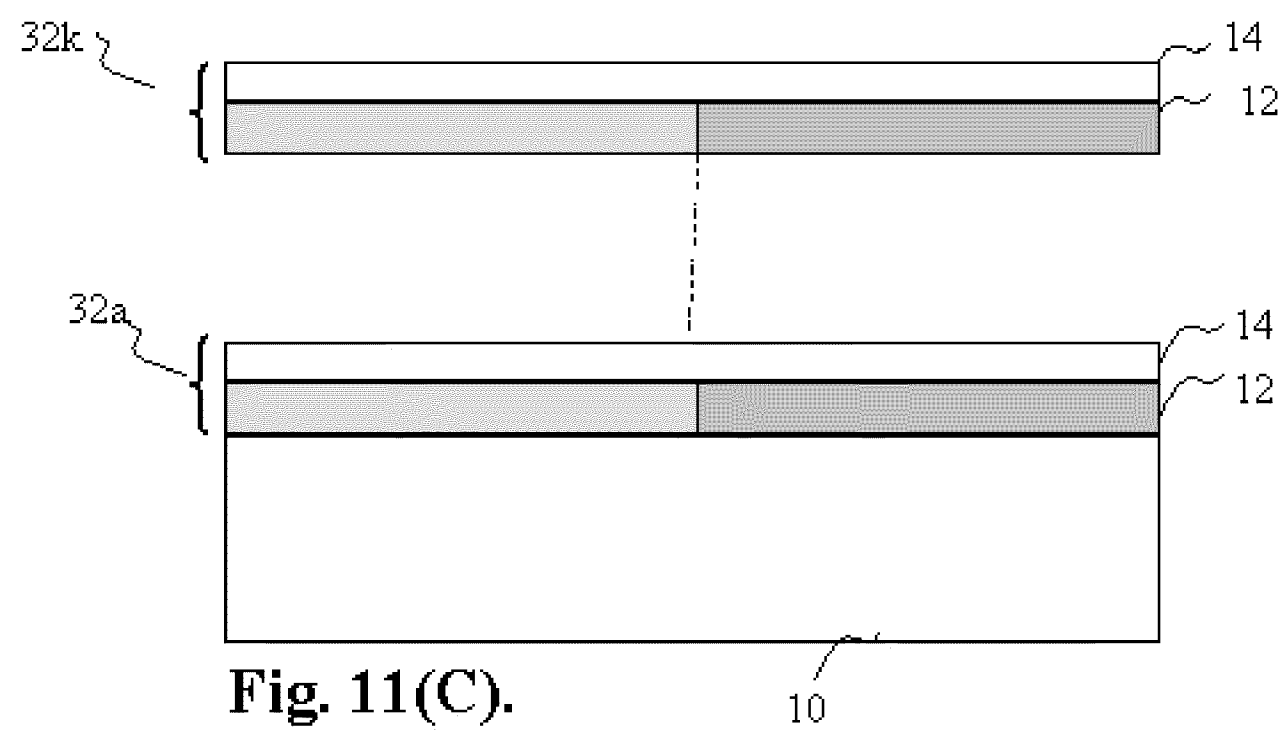


Fig. 11.

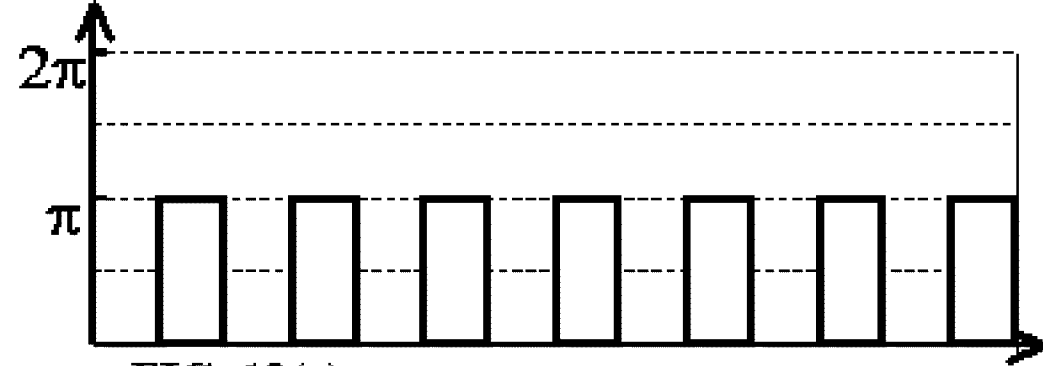


FIG. 12(a)

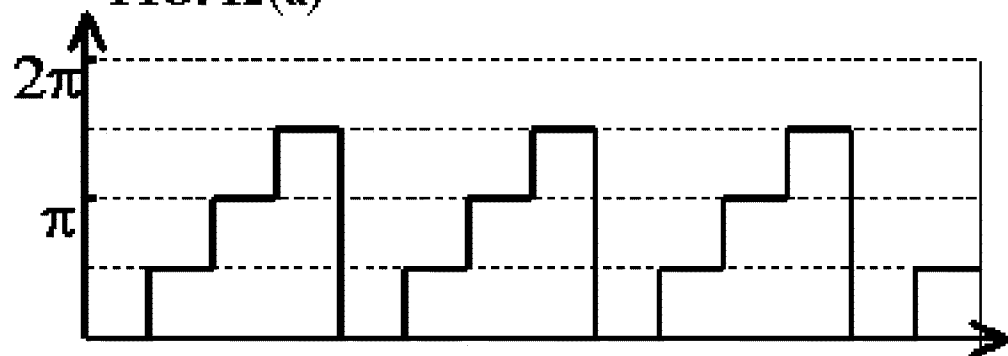


FIG. 12(b)

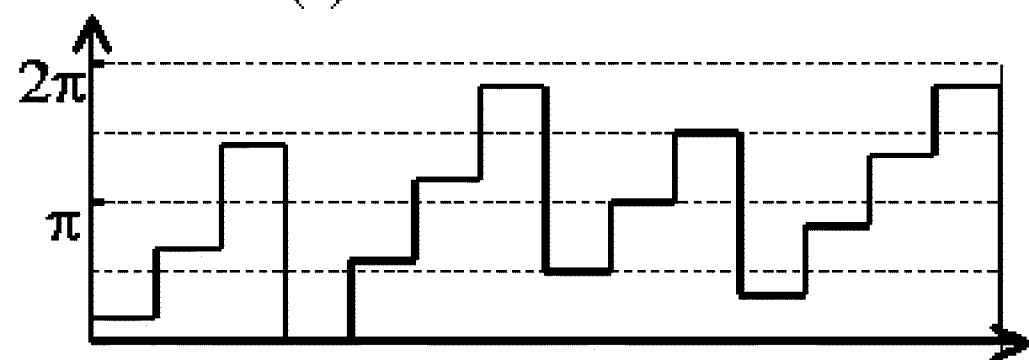


FIG. 12(c)

Fig. 12.